<div style="text-align: center">**REMARKS**</div>

Applicant has carefully reviewed the Office Action mailed June 25, 2010 and offers the following remarks in light of the above amendments.

Claims 1, 4, 6-7, 14, 17, and 19-20 were objected to because of the abbreviation "OFDM" and the use of bullet points in the claims. Claims 1-4, 6, 7, 14, 17, and 19-20 have been amended to correct these informalities and not for reasons related to patentability.

Claims 16-20 were objected to because of the term "adapted to." Claims 14 and 16-20 have been amended to change "adapted to" to "configured to" per the Patent Office's suggestion. These amendments are not made for reasons related to patentability.

Claims 1-26 were rejected under 35 U.S.C. § 103(a) as being unpatentable to U.S. Patent Application Publication No. 2002/0122383 to Wu et al. (hereinafter "Wu") in view of U.S. Patent No. 6,493,331 to Walton et al. (hereinafter "Walton"). Applicant respectfully traverses. When rejecting a claim under § 103, the Patent Office must either show that the prior art references teach or suggest all limitations of the claim or explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418, 82 U.S.P.Q.2d (BNA) 1385 (2007). In this case, the Patent Office has failed to show where each and every limitation of the claims is taught or suggested by the prior art. Further, for those limitations of the claims that are not taught or suggested by the prior art, the Patent Office has failed to explain why those limitations would have been obvious to one of ordinary skill in the art.

Before addressing the rejection, Applicant provides a brief summary of the embodiments disclosed in the current application. The disclosed embodiments provide a technique for scheduling data, and in particular, scheduling real-time or voice data for transmissions during a transmit time interval in a multi-carrier communication environment, such as an OFDM communication environment. For each transmit time interval, channel condition indicia for multiple users is determined, and an iterative scheduling process is then implemented based in part on the channel condition indicia. The iterative scheduling initially pre-assigns select tones for each of the remaining users that have not been permanently assigned tones for the given transmit time interval. The select tones assigned to each user may be assigned in groups corresponding to channels. These channels define available tones throughout the transmit time interval. The transmit time interval is broken into time segments, referred to as blocks, wherein

all of the available sub-carriers in the available spectrum are repeated for each block. Each sub-carrier in the resulting time-frequency continuum is referred to as a tone. If the tones are grouped into channels, channels may include tones over any number of frequencies or blocks. After the iterative scheduling initially pre-assigns select tones for each of the remaining users that have not been permanently assigned tones for the given transmit time interval, the remaining user having the least favorable channel conditions is selected as an active user. The newly selected active user is then permanently assigned the select tones that were initially pre-assigned to that particular user. The permanently assigned select tones are removed from consideration, and the process is repeated until all the remaining users are permanently assigned unique tones. At this point, scheduling may be initiated.

Claim 1 is representative and recites a method for scheduling data for transmission during a transmit time interval in a multi-carrier communication environment comprising:

determining channel condition indicia for a plurality of users;

in an iterative manner:

pre-assigning select tones for each remaining user of the plurality of users that has not been permanently assigned tones for the transmit time interval;

selecting a remaining user having least favorable channel conditions as an active user; and

permanently assigning to the active user the select tones pre-assigned to the active user, wherein once the select tones are permanently assigned to the active user, the active user is no longer a remaining user.

Claim 14 is an independent system claim that recites similar limitations as the limitations of claim 1.

The combination of Wu and Walton does not teach or suggest performing the claimed pre-assigning, selecting, and permanently assigning steps in an iterative manner as recited in claim 1. The Patent Office alleges that page 2, paragraph 0020, lines 2-3, and page 7, line 20-30 of Wu disclose "determining channel condition indicia for a plurality of users" and "permanently assigning to the active user the select tones pre-assigned to the active user, wherein once the select tones are permanently assigned to the active user, the active user is no longer a remaining user," as recited in claim 1. Applicant respectfully disagrees.

Paragraph 0020 of Wu does disclose "comparing the channel condition of each sub-carrier with a threshold." Wu also discloses in claim 8 a controller that "is configured to classify the sub-carriers into one of two groups in accordance with the channel condition, one of the two groups being indicative of time diversity and the other of the two groups being indicative of spatial diversity, the controller being further configured to determine a modulation scheme on each of the classified sub-carriers based on an estimated ratio selected from a further group consisting of a carrier to interference ratio and a signal to noise ratio." However, the cited portions of Wu does not disclose or suggest that select tones are pre-assigned to the active user and then are later permanently assigned to the active user in an iterative manner, wherein once the select tones are permanently assigned to the active user, the active user is no longer a remaining user, as is required by claim 1. The cited portions of Wu are silent as to pre-assigning and permanently assigned select tones in an iterative manner. There is no mention in Wu of pre-assigning or permanent assigning of select tones. Thus, Wu does not teach or suggest the limitations for which it is cited. Walton also fails to teach or suggest these limitations for the reasons set forth in the response filed March 22, 2010. Claims 1 and 14 are therefore not obvious in view of Wu and Walton.

The Patent Office admits that Wu does not disclose or suggest that "pre-assigning select tones for each remaining user of the plurality of users that has not been permanently assigned tones for the transmit time interval" and "selecting a remaining user having least favorable channel conditions as an active user" are performed "in an iterative manner," but alleges that Walton discloses these limitations (Office Action mailed June 25, 2010, pp. 3-4). Applicant respectfully disagrees.

Walton, like Wu, does not teach or suggest the iterative process claimed in independent claims 1 and 14. First, Walton, alone or in combination with Wu, does not teach or suggest that the pre-assigning, selecting, and permanent assigning steps are all done "in an iterative manner," as required by claims 1 and 14. The Patent Office cites to column 19, lines 50-55 of Walton as allegedly teaching this limitation (Office Action mailed June 25, 2010, p. 4). The cited portion of Walton does not relate to the pre-assigning, selecting, and permanent assigning steps of the claimed invention. The cited portion of Walton relates to addressing the imbalance in effective link margins (Walton, col. 19, lines 43-55). The imbalance in effective link margins is reduced by iteratively computing the back-off factors. The cells and channels having higher effective

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link margins will have their transmit powers reduced accordingly. *Id.* Thus, Walton discloses an iterative process, but the iterative process is computing back-off factors, not pre-assigning select tones, selecting a remaining user having least favorable channel conditions as an active user, and permanent assigning select tones. Accordingly, Walton does not teach or suggest the iterative process of the claims, which recites that the pre-assigning, selecting, and permanent assigning steps are all done "**in an iterative manner**," as recited in claims 1 and 14. Wu also fails to teach or suggest this limitation. Claims 1 and 14 are therefore patentable for this additional reason.

Walton, alone or in combination with Wu, also fails to teach or suggest "pre-assigning select tones for each remaining user of the plurality of users that has not been permanently assigned tones for the transmit time interval," as recited in claims 1 and 14. The Patent Office asserts that column 53, lines 5-21 teaches this limitation (Office Action mailed June 25, 2010, p. 4). Applicant respectfully disagrees. The cited portion of Walton discloses that a data processor "can assign the available resources such that the system goals of high performance and high efficiency are achieved." (Walton, col. 53, lines 6-9). Walton discloses that each channel stream is assigned to its respective time slot(s), sub-channel(s), and antenna(s) (Walton, col. 53, lines 11-14). However, the cited portion of Walton does not disclose or suggest any "pre-assigning," nor does the cited portion of Walton disclose pre-assigning **select tones**, as recited by the claimed invention. Wu also does not teach or suggest this limitation. Claims 1 and 14 are thus patentable for this additional reason.

Further, Walton, alone or in combination with Wu, does not teach or suggest "selecting a remaining user having least favorable channel conditions as an active user," as recited in claims 1 and 14. The Patent Office cites to Figure 11, block 1114 as allegedly teaching this limitation (Office Action mailed June 25, 2010, p. 4). Applicant respectfully disagrees. In the claimed invention, the following steps are performed in an iterative manner:

> pre-assigning select tones for each remaining user of the plurality of users that has not been permanently assigned tones for the transmit time interval;

> selecting a remaining user having least favorable channel conditions as an active user; and

> permanently assigning to the active user the select tones pre-assigned to the active user, wherein once the select tones are permanently assigned to the active user, the active user is no longer a remaining user.

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Thus, in the claimed invention, in each iteration, the remaining user having the **least favorable** channel conditions is selected as an active user and then the select tones pre-assigned to the active user are permanently assigned to the active user. The cited portion of Walton discloses the opposite. Walton discloses that the **best** possible channel is assigned to the highest priority user, and then the next best channel is assigned to the next highest priority user (Walton, col. 43, lines 15-23; see also Figure 11). Walton therefore does not teach or suggest "selecting a remaining user having **least favorable channel conditions** as an active user," as recited in claims 1 and 14. Wu also does not teach or suggest this limitation. Claims 1 and 14 are thus patentable for this additional reason.

Moreover, Walton is silent as to pre-assigning select tones and then, after selecting a remaining user having least favorable channel conditions as an active user, permanently assigning to the active user the select tones pre-assigned to the active user, as recited in the claimed invention. In the claimed invention, the pre-assigning, selecting, and permanent assigning steps are done in an iterative manner until all users have been permanently assigned the select tones. In particular, in each iteration, the remaining user that has the least favorable channel conditions is selected as an active user and is permanently assigned the select tones pre-assigned to the active user. Walton does not disclose this limitation. Walton, alone or in combination with Wu, does not teach or suggest the concepts of pre-assigning select tones, and then a later step of permanently assigning the pre-assigned select tones. There is no teaching in Walton that multiple iterations are performed in which the remaining user that has the least favorable channel conditions is selected as an active user and is permanently assigned the select tones pre-assigned to the active user **in each iteration**, as recited in the claimed invention. Claims 1 and 14 are thus patentable for this additional reason.

Claims 1 and 14 are patentable for the reasons set forth above. Claims 2-12 depend from claim 1 and recite all of the limitations of claim 1. Claims 15-25 depend from claim 14 and recite all of the limitations of claim 14. Claims 2-12 and 15-25 are thus patentable for at least the same reasons set forth above with respect to claims 1 and 14.

In addition, claims 2 and 15 are separately patentable. Claims 2 and 15 recite that "the select tones permanently assigned to active users are no longer available for pre-assignment to the remaining users." Walton does not teach this feature. The Patent Office cites to column 53, lines 36-40 of Walton as allegedly teaching this limitation (Office Action mailed June 25, 2010,

p. 5). Applicant respectfully disagrees. Applicant has reviewed the cited portion of Walton and finds no teaching that the select tones that are permanently assigned to active users are no longer available for pre-assignment to the remaining users. In fact, Walton is silent as to pre-assigning and permanent assigning of select tones. Claims 2 and 15 are separately patentable for this additional reason.

The present application is now in condition for allowance and such action is respectfully requested. The Examiner is encouraged to contact Applicant's representative regarding any remaining issues in an effort to expedite allowance and issuance of the present application.

Respectfully submitted,

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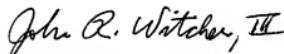
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